



Spicer® Axles & Brakes

ABIB-0315

Information Bulletin

Bulletin Type: Service Information

Topic: Tire Matching Guidelines and Calculations

Affected Models: All Tandem Drive Axles

Tire Mismatch is the difference in the number of revolutions a tire in a tandem set will make, typically determined in revolutions per mile. When mismatching occurs, excess heat builds up in the axle, thus increasing wear on internal axle components.

Effects on Axles due to Tire Mismatch are as follows:

Side-To-Side Mismatch: (Single & Tandems)

- Increases wear on wheel differential
- Differential lock-out system

Front-To-Back Mismatch (Tandems)

- Decreased life on inter-axle differential and power divider on the "D" (Forward Tandem) Head Assembly.

Dana recommends maintaining a tire mismatch no greater than 1.25% or less (see sample equation on page 2).

The best methods for measuring circumference are with a "Trammel" or "Flat Tape". DO NOT measure from the top of tire to ground; due to tire construction and inflation pressure this is an inaccurate method. When using a "flat Tape" for measuring circumference, run the tape around the tire and figure the diameter. The diameter is figured by dividing the circumference by 3.14.

NOTE: This is the only way to accurately measure the diameter.

TIRE MISMATCH CALCULATION

$$\frac{D_{\max} - D_{\min}}{D_{\min}} \times 100\% = \text{Tire Mismatch}$$

D_{\max} = Larger Average Tire Circumference
 D_{\min} = Smaller Average Tire Circumference

SAMPLE TIRE MISMATCH CALCULATION

	TIRE LOCATION	YOUR TIRE CIRCUMFERENCE (IN INCHES) NOTE 1	FORMULA REFERENCE LETTERS
FORWARD AXLE	LEFT – OUTER	40.86	LO
	LEFT – INNER	40.90	LI
	RIGHT – OUTER	40.62	RO
	RIGHT - INNER	40.56	RI
REAR AXLE	LEFT – OUTER	40.25	LO
	LEFT – INNER	40.12	LI
	RIGHT - OUTER	40.38	RO
	RIGHT – INNER	40.19	RI

(FORWARD AXLE – Side to Side) Mismatch Calculation %

(LO + LI) divided by 2 (40.86 + 40.90 = 81.76 divided by 2 = 40.88) which = D_{\max} dimension

(RO+ RI) divided by 2 (40.62 + 40.56 = 81.18 divided by 2 = 40.59) which = D_{\min} dimension

$$\% \text{ Mismatch} = \frac{40.88 - 40.59}{40.59} \times 100 = .71 \%$$

(REAR AXLE – Side to Side) Mismatch Calculation %

(LO + LI) divided by 2 (40.25 + 40.12 = 80.37 divided by 2 = 40.18) which = D_{\min} dimension

(RO+ RI) divided by 2 (40.38 + 40.19 = 80.56 divided by 2 = 40.28) which = D_{\max} dimension

$$\% \text{ Mismatch} = \frac{40.28 - 40.18}{40.18} \times 100 = .25 \%$$

(FORWARD AXLE to REAR AXLE) Mismatch Calculation %

$$\text{FORWARD AXLE} = \frac{40.86 + 40.90 + 40.62 + 40.56}{4} = 40.73 \text{ Avg}$$

$$\text{REAR AXLE} = \frac{40.25 + 40.12 + 40.38 + 40.19}{4} = 40.23 \text{ Avg}$$

$$\text{The \% of Tandem Mismatch} = \frac{40.73 - 40.23}{40.23} \times 100 = 1.24 \%$$

1.24 % is below the recommended 1.25 % mismatch, and therefore acceptable.

NOTE 1: These measurements are examples only. Reference the front page of this bulletin for methods on how to obtain your tire measurements.

TIRE MISMATCH CALCULATION

TIRE CALCULATION WORKSHEET

	TIRE LOCATION	YOUR TIRE CIRCUMFERENCE (IN INCHES)	FORMULA REFERENCE LETTERS
FORWARD AXLE	LEFT – OUTER	_____	LO
	LEFT – INNER	_____	LI
	RIGHT – OUTER	_____	RO
	RIGHT – INNER	_____	RI
REAR AXLE	LEFT – OUTER	_____	LO
	LEFT – INNER	_____	LI
	RIGHT – OUTER	_____	RO
	RIGHT – INNER	_____	RI

NOTES:



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 Or visit our web site at: <http://www.spicerparts.com>